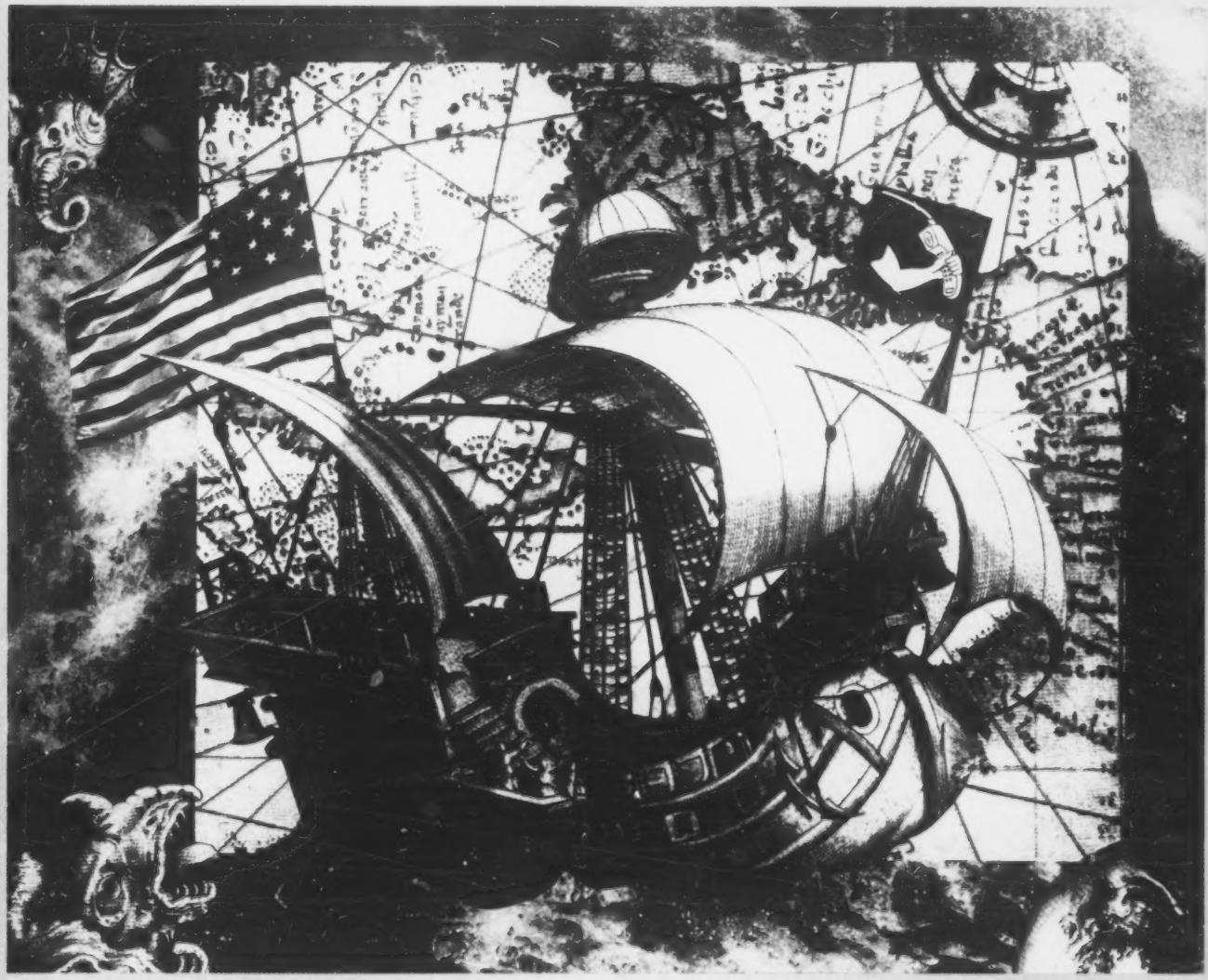
Telephony

AN INTERTEC PUBLICATION AUGUST 28, 1989 INTEGRATING VOICE & DATA COMMUNICATIONS $3



U.S. TELECOM VENDORS GO GLOBAL

Manufacturers set sail into the tricky international market waters in search of new opportunities

COURT SHAKES UP CANADIAN TELECOM

Landmark decision gives federal government authority to regulate telecommunications

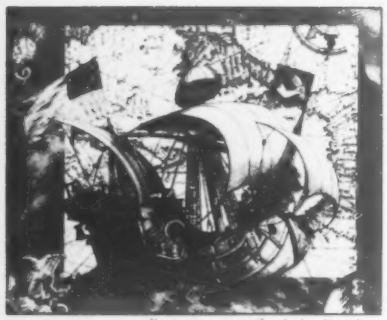
PACIFIC TELESIS REACHES SETTLEMENT WITH UNION

Union strikes continue against Ameritech, Bell Atlantic and Nynex

MONDAY, AUGUST 28, 1989 Volume 217, No. 10

Telephony

INTEGRATING VOICE & DATA COMMUNICATIONS



It seems manifest destiny has found its way into the hearts of U.S. telecom vendors. No longer satisfied with their domestic market, they're sailing into tricky international market waters. But will they find treasure across the ocean? Cover art by Cathy Joritz

DEPARTMENTS

66 ADVERTISERS' INDEX

6 IN MY OPINION

26 MEETINGS

68 MOVING AROUND INDUSTRY

56 NEW PRODUCTS AND SERVICES

NEWS OF THE WEEK

8 **COURT SHAKES UP CANADIAN TELECOM**
In a landmark decision, the Supreme Court of Canada says the federal government has authority over provincial governments in regulating telecommunications

9 **PACIFIC TELESIS REACHES UNION SETTLEMENT**
The Communications Workers of America win a tentative contract from PacTel; strikes continue against Ameritech, Bell Atlantic and Nynex

10 **MICHIGAN BELL TESTS AUTOMATED BILLING**
The Northern Telecom system uses voice recognition technology to eliminate the need for operator assistance on collect, credit card and third-party billed calls

14 **U S WEST RESPONDS TO AIR CRASH**
Telco employees worked around the clock to provide emergency communications service following the DC-10 crash in Sioux City, Iowa

FEATURES

28 **BIG BUSINESS DRIVES U.K. LOCAL FIBER**
By John Williamson. Britons haven't been particularly hot on bringing fiber to the local loop. But fiber could be spurred to the curb by CATV piggybacked with interactive telecom services and flexible access systems

34 **GOING GLOBAL**
By Fritz W. Ringling. Long satisfied with their domestic market, U.S. telecom vendors now are sailing into tricky international market waters

50 **INVESTMENT FRENZY!**
By Sunil Tagare. Investment in undersea fiber optic systems is increasing at a tremendous pace. The driving force is enormous profit

TELEPHONY (ISSN 0040-2656) is published weekly except semi-weekly the first week in July by Telephony Division, Intertec Publishing Corp., 55 E. Jackson Blvd., Chicago, IL 60604. **Postmaster:** Please send address changes to Telephony Subscription Dept. Intertec Publishing Corp., P.O. Box 12948, Overland Park, KS 66212. Second class postage paid at Chicago, IL, and at additional mailing offices. Single copies (payable in advance) U.S. $3.00 ea. Outside U.S. add $1.00 ea. Subscriptions: $35 one year. Outside U.S. $61 per year. Subscription rates apply to employees of operating telephone companies, telephone consultants, contractors, interconnect companies, specialized common carriers, military, government, associations, private communications users, schools, libraries. Change of address: include old address as well as new address. Attach issue label if possible. Allow 4 weeks for change to become effective. Copyright 1989 by Telephony Division, Intertec Publishing Corp. All rights reserved. Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by Telephony for libraries and other users registered with the Copyright Clearance Center (CCC) provided that the fee of $1.50 per page is paid directly to CCC, 21 Congress St., Salem, MA 01970. Special requests should be addressed to publisher.

In My Opinion

Man in the hot seat

Pekka Tarjanne is about to move into the hottest seat in the global telecommunications business. The sometime physicist, politician and Finnish PTT chief takes over Nov. 1 for Richard Butler as secretary general of the International Telecommunication Union.

Although there were originally two other candidates for the post, few people would willingly change places with Tarjanne. In addition to holding the ring between the numerous conflicting claims of the developed and developing world nations and fighting off a growing external challenge to the ITU's standards-making responsibility, Tarjanne will be running a United Nations agency that is sorely strapped for cash. This circumstance adversely affects its ability to discharge its obligations to its members and clearly does not help the morale of the ITU staff. In the recent past the staff has disrupted work in disputes over terms of employment and pensions.

And if all these problems were not enough, the very structure of the ITU may be in for a radical overhaul. In response to suggestions that its traditional organization had been rendered obsolete by recent changes in technology and the international regulatory environment, the 124-year-old agency has set up a high-level committee to analyze its modus operandi in detail and suggest appropriate changes. For Tarjanne, this situation is a little like taking a driving lesson in a vehicle still on the production line.

The Finn remains unperturbed by the likely rigors of his new office. And there are good reasons for his attitude.

One reason is that, being from outside the organization, he lacks the inhibitions that affect some of the insiders. What may be daunting or even impossible for someone steeped in ITU lore may be unexceptional to the new kid on the block.

Second, Tarjanne will not be alone. His predecessor Butler could, and sometimes did, play all the instruments in the ITU band himself. By contrast, Tarjanne is a team player with a deep-seated belief in delegation.

"The work of the ITU is not a one-man show," Tarjanne said in his acceptance speech. "It can be described much better and to the point as team work by its 166 members, served by the elected officials and the staff as a whole in Geneva and all over the world."

Of course, not everything will be sweetness and light for Tarjanne. I want to wish him every strength and the best of luck in the struggles ahead.

John Wilson

Telephony

EDITORIAL

Editor
CAROL WILSON

Managing Editor
KAREN WOODWARD

Executive News Editor
PAUL TRAVIS

Technical Editor
MICHAEL WARR

International Editor
JOHN WILLIAMSON

Washington Editor
CHARLES MASON

Special Projects Editor
SUSAN UBIS

Outside Plant Editor
LLOYD F. (FRANK) BRISK

Associate Editor
DEBORAH PFEIFFER

Assistant Editors
DAWN M. BUSHAUS
ANN LINDSTROM
LAURA O'BRIEN

Art Director
LAURA M. DOYLE

Editorial Secretary
MARY CAROL CANON

ADMINISTRATION

Group Vice President
JOHN WICKERSHAM

Publisher
LARRY LANNON

Publishing Consultant
LEO ANDERSON

Director of Marketing
CZATDANA INAN

Special Projects Director
GERRY BARRETT

ADVERTISING & MARKETING

Advertising Sales Director
MARK HICKEY

Production Director
BARBARA HURD

Marketing Coordinator
MAURA C. GOODMAN

Classified Advertising Manager
JEANNE VALENTINE

Production Manager
LYNITA BARLOW

Production Assistant
YOLANDA LEWIS

CIRCULATION

Corporate Circulation Director
CHARLES RASH

Circulation Director
JOAN CHODORS

Circulation Manager
CHRIS LOTESTO

HEADQUARTERS OFFICE

TELEPHONY DIVISION,
Intertec Publishing, 55 E. Jackson,
Chicago, IL 60604
Telephone 312/922-2435
TWX 910/221-1058 FAX 312/922-1408

EUROPEAN BUREAU, 71 Coval Lane,
Chelmsford, Essex CM1 1TG, England
Telephone Chelmsford (0245) 283984

WASHINGTON OFFICE,
National Press Building
529 14 St., N.W., Room 962
Washington, D.C. 20045
Telephone 202/872-0465
FAX 202/872-0469

INTERTEC

to attach their own terminal equipment to the telephone network although other provinces do not.

CNCP Telecommunications can provide interconnected private line services in British Columbia, Alberta, Ontario and Quebec, but not in other provinces. National competitors must go through lengthy and expensive hearings in each province in which they wish to operate, Egan said. The Supreme Court decision will eliminate these problems and allow the CRTC to have uniform rules across Canada. T

PacTel, CWA come to terms

Dawn Bushaus
Assistant Editor

Pacific Telesis reached a tentative settlement with the Communications Workers of America early last week, ending a two-week strike. But on the other coast, tension between Nynex and the union increased and the two sides seemed to grow further apart.

The mood of striking CWA members turned increasingly bitter after one union worker was killed while picketing. Edward G. Horgan, 34, a cable splicer with Nynex, died Aug. 16, one day after he fell off the hood of a car that was attempting to cross a picket line on a service road at a Nynex New York Telephone facility in Valhalla.

Horgan climbed onto a car driven by another Nynex employee, Tricia McNamara, according to Lt. Michael Mahony of the Valhalla Police Department. Horgan then reportedly fell off of the car and struck his head on the pavement.

Police have not made any arrests in connection with the incident and an investigation is continuing, Mahony said.

Several thousand CWA employees rallied at a Nynex facility in White Plains Aug. 17 to commemorate Horgan's death, and many attended his funeral.

CWA spokeswoman Clara Allen said Horgan's death may have contributed to increased tension between Nynex and the CWA. "Anything that harms an individual does intensify the efforts of the people picketing," she said.

Also in the Nynex region, Donna Conroy, head of the CWA local in upstate Troy, N.Y., was arrested while picketing and charged with disorderly conduct Aug. 21.

Allen said "several" CWA members have been arrested and restraining orders have been issued against Nynex picketers since the strike began Aug. 6.

"We consider the incidents to be harassment," she said.

At press time, no formal or informal negotiations were scheduled at Nynex. Talks broke down initially over what the CWA called attempts by the telco to shift the rising cost of health care to workers.

Elsewhere in the country, the Ameritech companies were scheduled to resume talks for the first time since the CWA struck the five telcos Aug. 13.

Negotiations at Illinois Bell, Indiana

continued on page 10

CONTRACT SCOREBOARD

Company	Number of employees CWA	Number of employees IBEW	Status	Tentative settlement terms
BELL ATLANTIC	41,000	11,000	settled (except some local issues)	7.5% wage increase
Bell of Pennsylvania		2000	settled	7.5% wage increase
New Jersey Bell		9000	on strike	
BELLSOUTH	64,000		settled	8%-11% wage increase
PACIFIC TELESIS	42,400		settled	9.4% wage increase
Pac Bell Directories		1600	settled	details not available
NYNEX	40,000	20,000	on strike	
AMERITECH	35,100	13,600		
Illinois Bell	3000		on strike	(IBEW) 9% wage increase includes $1000 bonus
		13,000	settled	
Indiana Bell	4300		on strike	
		400	settled	(IBEW) details not available
Wisconsin Bell	4000		on strike	
Ohio Bell	10,200		on strike	
Michigan Bell	13,000		on strike	
Ameritech Services	600		on strike	(IBEW) 10% wage increase includes $1000 bonus
		200	settled	
U S WEST	41,000		settled	10% wage increase includes $600 bonus
SOUTHWESTERN BELL	45,000		settled	10% wage increase includes $1000 bonus

Bell, Ohio Bell, Wisconsin Bell, Michigan Bell and Ameritech Services broke down over the issue of wages. Workers do not want bonus payments upon ratification. Instead, they want all increases to be reflected in the base wages.

Indiana Bell, Illinois Bell and Ameritech Services have already settled with the International Brotherhood of Electrical Workers.

Some of the IBEW members were crossing picket lines, but still voicing support for the CWA. Other IBEW members refused to cross picket lines.

The CWA began an advertising campaign last week in the five Ameritech states urging customers not to pay their phone bills until the strike is settled.

The CWA alleges Ameritech has contacted radio stations to request that they not air the advertisements. Scores of radio stations have refused to sell the CWA air time, the union said.

Ameritech spokesman Steve Ford said, however, Ameritech has not contacted any radio stations about the campaign.

"That is absolutely false," Ford said. "It's just another side show of the CWA. The real issue here is the need to focus on the issues at the bargaining table."

At Bell Atlantic, CWA workers had not gone back to work by mid-week even though they reached a tentative regional agreement Aug. 17. The strikes continued in support of IBEW workers at New Jersey Bell, which had not reached an agreement, and because local issues had not been settled at some of the Bell Atlantic companies.

A Bell Atlantic spokesman reported that New Jersey Bell had tentatively settled its local issues, as had the C&P Telephone companies. Bell of Pennsylvania and Diamond State Telephone continued to negotiate locally.

Bell of Pennsylvania reached a tentative settlement with its IBEW members. That agreement calls for a 3% wage increase the first year of the contract and 2.25% increases the following two years. A cost of living allowance will also be added in the second and third years.

The two sides agreed to establish a health care network of hospitals and physicians that agree to hold down the costs of health care.

The CWA agreement with PacTel, still subject to ratification, resembles the tentative settlements of Southwestern Bell, BellSouth, U S West and Bell Atlantic.

Workers at Pacific Bell and Nevada Bell will receive a 3.1% increase in base wages for the first year of the contract, followed by a 3.7% increase in the second year and a 2.6% increase in the third.

Workers will also share in lump-sum team incentive awards that will be based on the financial and service results of the companies.

A preferred provider health care plan will be instituted under which employees who choose a "preferred" physician will pay only $10 for an office visit. Under the plan, some services, such as preventative care, will be completely covered by the company.

The PacTel agreement also provides for family care benefits, including a provision allowing employees to take up to a year off—with employment guaranteed upon return—to care for a newborn, an adopted child or an ill family member. Also included in the pact were reimbursement for expenses associated with adoption and the establishment of a joint union-company committee to study family care needs.

Pacific Bell Directories settled two weeks ago with its IBEW workers, but the Pac Bell subsidiary has not released terms of the tentative agreement. T

Dennis bids adieu to FCC Oct. 1

Commissioner Patricia Diaz Dennis will leave the Federal Communications Commission Oct. 1 to join a law firm, she announced last week.

Dennis' appointment to the commission expired June 30. However, she stayed on at the FCC while the three recently appointed commissioners were confirmed to their new posts. Dennis was appointed to the FCC by President Reagan in 1986. Before taking the seat on the commission, Dennis was a member of the National Labor Relations Board. Prior to entering government service, she worked as a labor attorney with ABC.

Dennis said she will become a partner in the Ohio-based law firm of Jones, Day, Reavis and Pogue. She will work in the firm's Washington office and head up the communications section.

Dennis also had been negotiating over a possible position with MCI, according to MCI executives.

Dennis

It is up to the White House to name a successor to Dennis, whose seat must be filled by a Democrat.

Meanwhile, both Alfred Sikes, the new FCC chairman, and Sherrie Marshall have been officially sworn in as commission members and have begun assembling their staffs. The other new member, Andrew Barrett, is expected to be sworn in next month.

NTI, Mich. Bell test automated billing service

Dawn Bushaus
Assistant Editor

Northern Telecom Inc. and Michigan Bell are testing a new automated billing system that could make operator assistance for collect, credit card and third-number billing a necessity of the past.

NTI is touting its Automated Alternate Billing Service as a "first-of-its-kind" voice recognition technology that automates billing.

The system is designed for use with NTI's Traffic Operator Position Systems. TOPS software in a DMS-200 toll switch and the TOPS Voice Service Node provide the technology.

The VSN generates voice prompts that ask the caller to dial two digits corresponding to the service desired. For third-party and collect calls, the system calls the party to be billed and asks if the charges will be accepted. The node will then either complete the call or tell the caller that charges have been refused.

A key feature of the billing system is its accessibility from rotary dial telephones,

continued on page 14

Going global

Long satisfied with their domestic market, U.S. telecom vendors now are sailing into tricky international market waters

FRITZ W. RINGLING

Until the early 1970s, the world telecommunications equipment market consisted of a constellation of national markets in which needs were satisfied by indigenous vendors. This structure existed for the sake of network homogeneity, universal service and public policy goals.

Network service providers were either regulated monopolies, privately or publicly owned, or government agencies with charters that outlined their duties and responsibilities. In most cases, the network service providers were the sole buyers of, and distribution channels for, equipment.

Equipment vendors were structurally organized into vertically integrated subsidiaries of network service providers or non-affiliated independent companies, and were either privately or publicly owned. Despite their legal structures, the various national vendors had, for the most part, organized themselves into oligopolies or cartels.

Competition was largely confined to markets of the developing world, or where domestic equipment vendors were deficient in technology or product functionality. To penetrate such markets, manufacturers usually had to establish domestic manufacturing facilities or transfer technology to the domestic carrier.

With the exception of GTE Corp. and ITT Corp., U.S. vendors did not have substantial offshore interests. AT&T's ownership of Northern Telecom was transferred to Bell Canada as part of the 1956 consent decree. On the other hand, foreign vendors had only a marginal share of the U.S. telecommunications equipment market, with significant penetration occurring only at the low end.

In this environment, users had little influence over the evolution of the telecommunications infrastructure, applications or customer premises equipment development. Public policy requirements and regulatory issues, rather than user needs, were paramount.

The telecommunications environment was thus the antithesis of the computer marketplace, where users and vendors dictated the evolution of technology and applications. Yet, the quest for a synergistic coupling of telecommunications and computer technologies and their applications always was a desirable goal. When vendors acted to make it happen, and users recognized the benefits, the existing market structure crumbled.

In Transition

The 1970s was the period of transition for the U.S. market. Foreign suppliers and their domestic distributors quickly seized the initiative and now dominate the low-end CPE market. The procurement process in foreign countries, on the other hand, witnessed few changes.

But then, U.S. vendors only made sporadic forays into offshore markets. They generally preferred to sign licensing agreements with foreign manufacturers, similar to the agreement between AT&T and Goldstar.

The 1980s have seen the restructuring of the global telecommunications marketplace that continues to gain momentum as the decade comes to an end. Although it is far from complete and has unevenly affected markets across the world, the process has had its most pronounced effect in three areas: the CPE market segment, where competition is the rule rather than the exception; the procurement process for network equipment where the existing vendor oligopolies are being dismantled; and the organizational structure where the publicly owned network service monopolies are either privatized or deregulated.

The restructuring process is being propelled forward by three key drivers. The de-emphasis of economic micromanagement provides the political and economic rationale. Technological advances in very large scale integration and photonics are revolutionizing the existing telecommunications infrastructure, providing the technological platform for changes. Finally, the devolution of processing power from mainframes to PCs is placing the user at the center of the computing universe. Subordinate factors pushing for a competitive environment are U.S.

continued on page 39

TABLE 1 TELECOMMUNICATIONS VENDOR MARKET SHARE

AT&T	10.0%	9.8%	9.2%
Siemens (including Rolm)	7.7	7.8	8.2
Ericsson	4.8	4.5	4.8
GPT	3.0	3.0	2.9
Philips	1.7	1.6	1.5
Bosch	1.3	1.4	1.6
STC	1.3	1.2	1.1

Source: Robert A. Saylas Associates, Inc.

Going Global *continued*

government policies for market reciprocity and European Economic Community integration plans for a single European market by 1992.

Clearly, the acceptance of competition, at least for some market segments, in Europe and the Pacific Rim countries has been driven by necessity. Technological innovations at both the transmission and switching levels have rendered much of the existing network infrastructure obsolete. Local suppliers are not always providers of equipment incorporating state-of-the-art technology. The cost of communications in an era where information transfer, rather than product movement, is the lifeblood of the enterprise has come to affect corporate investment decisions profoundly, placing some countries at a disadvantage.

In the final analysis, however, it is the transition from vendor-driven, technology-oriented advances to user-driven applications-oriented progress that is driving the market's quest for competition. The national telecommunications monopolies have little choice but to respond to this changing environment—users are demanding nothing less.

Grab a Piece of the Pie

The structural changes affecting the national telecommunications markets have prompted vendors to scramble for global market position, resulting in mergers, takeovers and joint ventures, as well as heavy investments in research and development. In 1988, the global telecommunications equipment market produced $115 billion in vendor revenues.

It is estimated that, in 1989, this global market will be worth $120 billion. The conservative outlook for 1992 suggests a $140 billion market. Thirteen vendors control slightly more than 50% of that market, with AT&T, Alcatel and Siemens controlling the rest (Table 1).

At this point, it is safe to assume that not all vendors in the marketplace will survive as independent entities and that some of the 13 largest companies may not either. Plessey has already proven vulnerable to a takeover attempt by GEC Corp. and Siemens. Standard Telephones & Cables and OKI also appear to be vulnerable.

Vendors whose primary market focus is outside telecommunications may decide to merge their telecommunications operations into larger suppliers that have a global reach and greater product depth. Philips NV, STC, GEC or Bosch could be placed into this category.

The United States has, for all practical purposes, only two vendors that supply a complete array of equipment—AT&T and Northern Telecom. It also is safe to assume that only a handful of vendors have the resources to become truly global players with standardized product offerings. The most likely candidates for this role are AT&T, Alcatel NV, Siemens (including Rolm), NEC, Fujitsu, Northern Telecom and LM Ericsson. In its transition from countrywide to worldwide market positioning, the industry consolidation will follow in the footsteps of the chemical, pharmaceutical or electrical power equipment industries, which have undergone analogous consolidations.

In addition to the transition from a vendor-driven to a user-driven market environment, vendors can expect this market to show marginal growth at best. Prices for hardware are eroding, even as there is a growing emphasis on software for upgrading equipment. Clearly, these conditions will accentuate the pressure on smaller vendors to merge or abandon the market.

The CPE market is projected to grow most rapidly. By far the largest portion of this growth is occurring outside the U.S. The principal driver is the pent-up demand for CPE-based networking solutions, which has been spurred by the liberalization of the CPE market itself. A growth rate of 8% to 10% for this market segment is a realistic projection.

The picture looks less pleasant for the transmission, cable and outside plant markets. These markets will shrink by about 6% to 8% during the next five years because of the price and performance of FO-based systems.

The central office switching market, on the other hand, will show an annual growth rate of between 3% and 6%, depending upon the replacement timetable for analog switches by network service provid-

continued on page 40

ers and the availability of capital in developing countries (Table 2).

U.S. companies have been slow to take advantage of the changing market environment. Unlike European vendors, they have had a domestic market large enough to satisfy their revenue needs, reducing the incentive to look abroad. Moreover, despite a growing trade deficit in telecommunications equipment, the U.S. network equipment market segment continues to be dominated by domestic suppliers (Table 3). Only at the CPE level have foreign vendors made significant inroads. And those successes in the CPE market were predictable, given the evolution of the domestic consumer electronics market.

Finding Frustration

Growth in the domestic market is now largely absent. Coupled with competition from foreign suppliers, revenue growth for U.S. vendors thus can only be secured at the expense of competitors, or through expansion into offshore markets (Table 4). Lack of experience, short-term profit requirements, foreign procurement procedures and the absence of financial subsidies have frustrated U.S. vendors, however.

TABLE 2 WORLD TELECOMMUNICATIONS EQUIPMENT MARKET
(In billions)

	1988 actual	1989 estimated	1992 projected
CPE	$ 40.0	$ 44.0	$ 56.0
Transmission	23.0	22.0	19.0
Cable & DBS	11.0	11.0	12.0
Switching	40.0	43.0	53.0
Total	$ 115.0	$ 120.0	$ 140.0

Source: Robert A. Sayles Associates, Inc.

TABLE 3 U.S. CO SWITCHING AND PBX SUPPLIER MARKET SHARES, 1988

	CO switching 9.4M lines	PBXs 4.8M lines
AT&T	20.0%	30.0%
Northern Telecom	40.0	20.0
Siemens*	2.0	2.0
Ericsson	1.0	N.M.
NEC	2.0	2.0
Fujitsu/GTE	N.M.	5.0
Stromberg (GTE)	2.0	—
Mitel	—	10.0
Other	33.0	31.0

Source: Robert A. Sayles Associates, Inc./NEI/Datapro
*Includes ACS Communications Systems, AT&T-GTE joint venture
**Includes Rolm acquisition from IBM Corp.

TABLE 4 CONSTRUCTION BUDGETS
(In billions)

	1988 actual	1989 estimated	1992 projected
Europe	40.8	44.0	50.4
Other	29.4	30.3	37.3

Source: Telephony/Robert A. Sayles Associates, Inc.

TABLE 5 PROJECTED WORLD NETWORK GROWTH—1988-1992
Access Lines (in millions)

	1988 actual	1989 estimated	1992 projected
Total	185	192	216
North America	144	148	161
Other	41	44	55
Total	185	192	216

Source: A.D. Little, Telephony, Robert A. Sayles Associates, Inc.

TABLE 6 COMPUTER VENDOR EUROPEAN MARKET SHARE 1987

Total	$ 57.2 billion				
IBM	36.5%	Apple	3.5%	ICL	4.0%
DEC	7.4	HP	4.0	Other	14.2

Source: IDC, Robert A. Sayles Associates, Inc.

They are finding that entry into foreign markets continues to be subjected to a variety of visible and invisible barriers, especially when network equipment is involved. The fact of the matter is that the same is true for the U.S. market. In foreign markets, distribution channels, nomenclature and special interest groups are the dominant factors inhibiting market penetration by U.S. vendors. The long absence of U.S. vendors from the international scene has not been helpful, and this situation will not change in the near future

Faced with a saturated domestic market and intensifying competition from foreign vendors, U.S. manufacturers must now make the investments in manufacturing and distribution facilities that will provide access to the real growth markets of Europe and the Pacific Rim (Table 5). Where joint ventures are appropriate, they also should be pursued.

To be successful, vendors must settle in for the long haul and obtain native acceptance. IBM is a good example of this strategy. And AT&T and Northern Telecom recognized this fact and established manufacturing facilities in Europe, bought equity interests in existing manufacturers and created joint venture operations. Northern Telecom now owns an 27.8% stake in the U.K.'s STC, and AT&T has formed a joint venture with Italtel to gain access to the Italian market. AT&T also has ventures with Telefonica, Lucky-Goldstar, Ricoh and Taiwan Telecommunications.

Northern Telecom, with its bases in Canada and the Caribbean, always has been less dependent than AT&T on one market, although more than 60% of Northern's revenues come from U.S. sales. On the other hand, the fact that only about 10% of Northern Telecom revenues come from non-North American

continued on page 42

TABLE 7 WORLD PBX AND KEY SYSTEM MARKETS
(In thousands of lines)

	PBX	KTS	PBX	KTS	PBX	KTS
Europe	4600	1800	4800	1900	5300	2100
Other	2000	800	2100	850	2400	1000

Source: NEI, Datapro, Robert A. Sayles Associates, Inc.

Going Global *continued*

sales also attests to the difficulty of penetrating foreign markets.

Northern Telecom's progress is a sign of its persistence, which is a prerequisite for success, and the need to provide state-of-the-art technology. To its credit, AT&T, after initial attempts were rebuffed, concentrated its global marketing effort on areas without strong national vendors, where technology lags or where no strong link between a monopoly service provider and a vendor exists. For example, look at AT&T's efforts in the Netherlands, Spain, Italy, Switzerland, Korea and Taiwan. Markets in Britain (GEC-Plessey Telecommunications and LM Ericsson), France (Alcatel and Ericsson/CGCT), Germany (Siemens and SEL), Belgium (Alcatel and Siemens/GTE), Scandinavia (Alcatel and Ericsson) and Japan (Fujitsu, NEC and Hitachi) have been avoided, except for "commodity" products.

In Japan, both Northern Telecom and AT&T have generated major orders, but it remains to be seen whether these can be turned into "system" sales. U.S. government lobbying and NTT's desire for state-of-the-art technology are creating a positive climate. But significant sales in Japan, despite the two companies' technological strength, will be difficult.

Another growing market arena is the developing world, where significant work is under way to build telecom network infrastructures. Here, however, AT&T will be hard-pressed to compete with European and Asian vendors on price, due to the inherent capability of non-U.S. vendors to provide attractive financing packages.

The Learning Curve

Clearly, the key to success for U.S. vendors of network equipment is establishing a close working relationship with network service providers. In this regard, U.S. vendors have much to learn from foreign suppliers that have learned to make investments in which returns may be a long time in coming. The experience of Siemens or Ericsson in the U.S. market should serve as excellent examples.

In fact, despite the *de jure* openness of the U.S. market, domestic suppliers with international ambitions should analyze the struggle of foreign companies to succeed in the U.S. as a guide for what to expect overseas. For example, it took Northern Telecom six years to make a breakthrough in the U.S. Neither Ericsson nor Siemens is close to a breakthrough at this point, despite investing millions to adapt their CO switches for the Bell regional holding company market. And NEC, Fujitsu and Hitachi had to accept an analogous time frame.

Within the CPE market, successful penetration of offshore markets by U.S. vendors also will be difficult, but several key factors favor U.S. suppliers. First, the U.S.-produced products themselves are feature-rich and represent state-of-the-art technology. In addition, U.S.-made gear always has incorporated networking capabilities of growing importance to users elsewhere. Finally, rigorous competition within their domestic market has made U.S. manufacturers more cognizant of user requirements, a definite advantage in markets where user needs are just beginning to receive the recognition they deserve from local suppliers.

The track record for U.S. vendors in foreign markets has always been best when users were the paramount decision-makers and their requirements were the drivers. If the computer industry can serve as a guide (Table 6), U.S. CPE vendors are well positioned for market penetration in Europe, even though European CPE suppliers are in a much stronger position than their colleagues in the computer industry. In addition, revenue opportunities for the CPE market segment also will come from replacement of older technology with state-of-the-art equipment (Table 7).

Japanese vendors pose a serious challenge. Their strength is price competitiveness and product reliability. Their success, however, as well as that of the U.S. vendors, will ultimately depend on market reciprocity. Unfortunately, international trade issues have been politicized and have reached an emotional stage. European CPE vendors will, on the other hand, have to significantly adjust their marketing and pricing strategies to maintain their current position. This will not be an easy task, since their frame of reference continues to be the outmoded oligopolistic market structure. It could be that computer vendors will mount a serious challenge in Europe to both U.S. and domestic vendors. The success of Nixdorf is a case in point.

Northern Telecom and Network Equipment Technologies, the T-1 multiplexer vendor, have led the way for U.S. vendors. Both companies operate through national partners: STC for Northern Telecom, and British Telecom for NET. The two companies also have made long-term commitments to the

continued on page 47

market. They market state-of-the-art equipment that is feature-rich and puts the user in control.

In addition, NET migrates into foreign markets in conjunction with its domestic customers. This user-oriented marketing strategy in combination with local manufacturing facilities bodes well for success. In contrast, relationships between partners with different priorities are the least likely to succeed, as the AT&T-Olivetti partnership illustrates.

Political Realities

In the final analysis, however, no matter how superior the technology, how rich the features or how user-oriented the marketing strategy, it will be the political climate at a given time that determines the probability of success or failure. For the moment all lights are green.

The lights may turn red, but it is a safe bet that no one is ready to engage in a protracted trade war over telecommunications equipment. The EEC, Japan and the U.S. all are eager to diffuse the issue. Popular sentiment, however, could be the bogy, and Congress might overreact (Table 8).

In the meantime, Japan's largest carrier, Nippon Telegraph and Telephone Corp., and the European PTTs are gradually opening their procurement processes. Progress will continue to be slow. But U.S. vendors only recently have entered offshore markets and would be misguided to expect immediate results.

U.S. vendors will serve their shareholders and potential customers best by accepting the fact that the return on investments into foreign markets will be slow in materializing. Deep pockets are an important prerequisite for success in the international marketplace. But they certainly are not the only one. An alternative, especially for smaller companies, may be a carefully chosen distributor or partner.

If an immediate return on investment is envisioned, it may be better to invest elsewhere. Competition is fierce. Special interest groups do not exist. Regulation and standards can be a barrier, and the business culture can be a problem. Significant rewards, however, do await those U.S. vendors that heed user needs and play the game according to foreign market rules. T

TABLE 8 HOW AMERICANS RATE FAIRNESS OF U.S. TRADING PARTNERS

Canada	80%	8%	12
West Germany	56	19	25
South Korea	30	42	28
Japan	29	50	11

Source: Wall Street Journal poll taken January 9-14, 1989

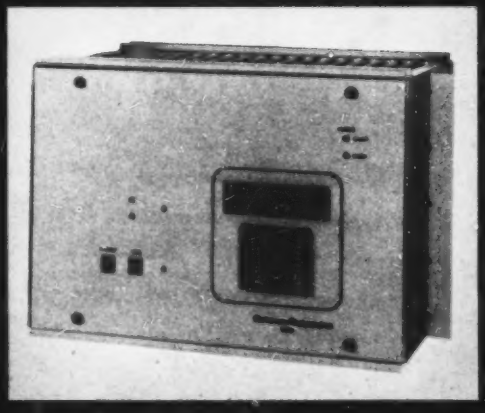
Fritz W. Ringling is a Principal at Robert A. Sayles Associates Inc., a communications consulting firm based in Los Altos, Calif.

VOICE • NETWORK CONTROL • ANI • PAY-PER-VIEW • SCREENING • BLOCKING • INTERCEPT • VOICE • NETWORK CONTROL • ANI • PAY-PER-VIEW • SCREENING • BLOCKING • INTERCEPT • VOICE • NETWORK CONTROL • ANI • PAY-PER-VIEW • SCREENING • BLOCKING • INTERCEPT • VOICE • NETWORK CONTROL • ANI • PAY-PER-VIEW • SCREENING • BLOCKING • INTERCEPT • VOICE • NETWORK CONTROL • ANI • PAY-PER-VIEW • SCREENING • BLOCKING • INTERCEPT • VOICE • NETWORK CONTROL • ANI • PAY-PER-VIEW • SCREENING • BLOCKING • INTERCEPT • VOICE

Science Dynamics
CORPORATION

Introduces

Fully Distributed Automatic Intercept Technology



Science Dynamics' products and support services are committed to excellence. Our company policies demand we uphold this commitment and our customers expect it.

Voice Response System

- Automatic change number referrals
- Customized message announcements
- User recordable announcements
- Service and emergency announcements
- Information provider services
- CLASS messages

Science Dynamics
CORPORATION

Circle No. 25 on Reader Service Card